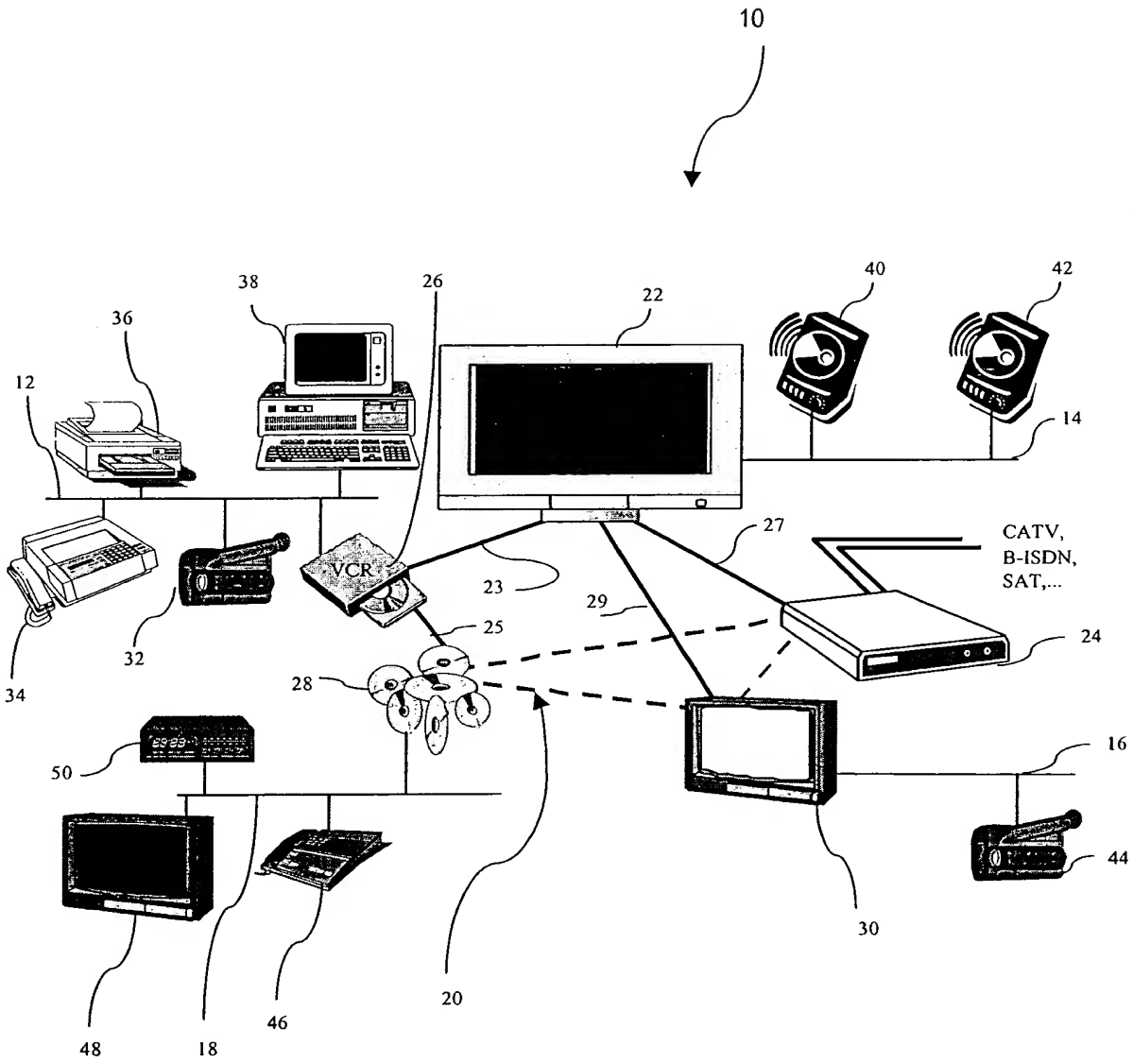
10
38
26
22
40
42
36
12
14
VCR
27
CATV,
B-ISDN,
SAT,...
23
29
25
24
32
34
28
50
16
44
30
20
48
18
46

Figure 1

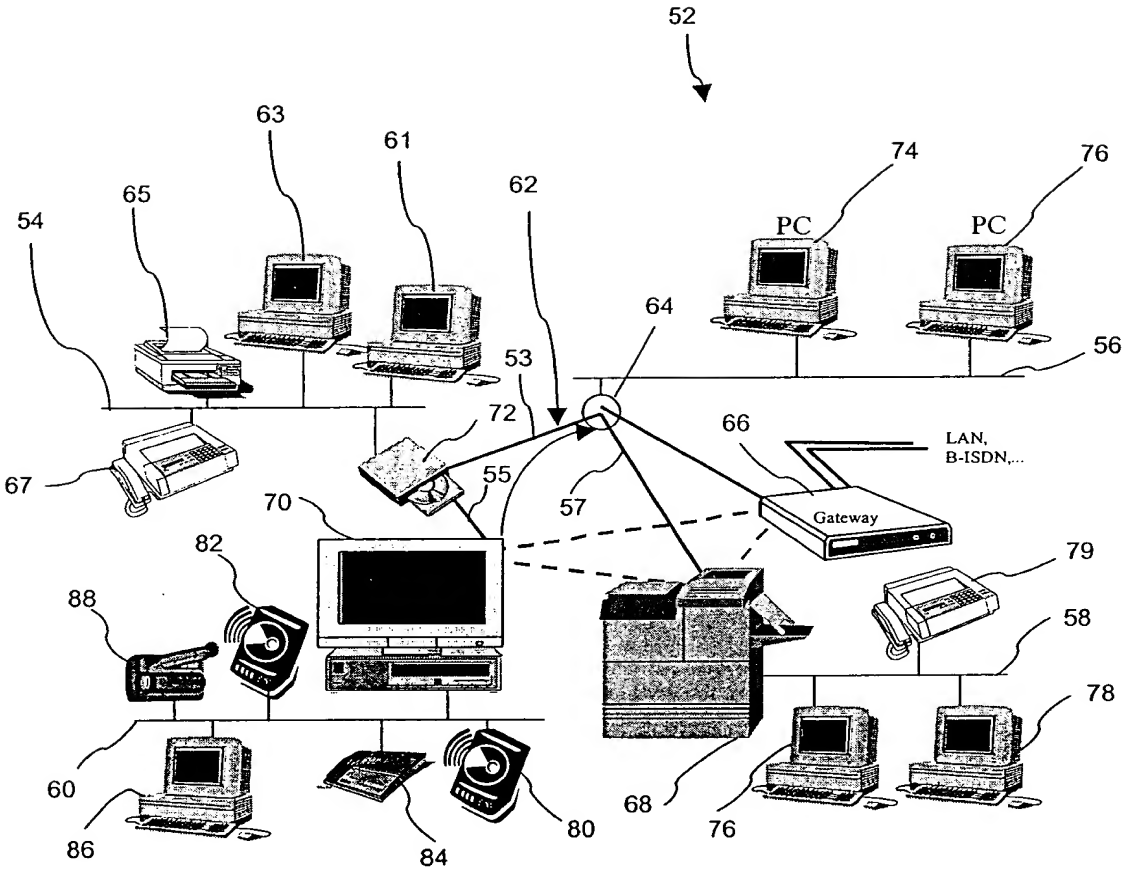
52
63
61
74
76
65
62
PC
PC
54
64
56
53
72
66
LAN,
B-ISDN,...
67
55
57
Gateway
70
82
79
88
58
78
60
68
76
86
84
80

Figure 2

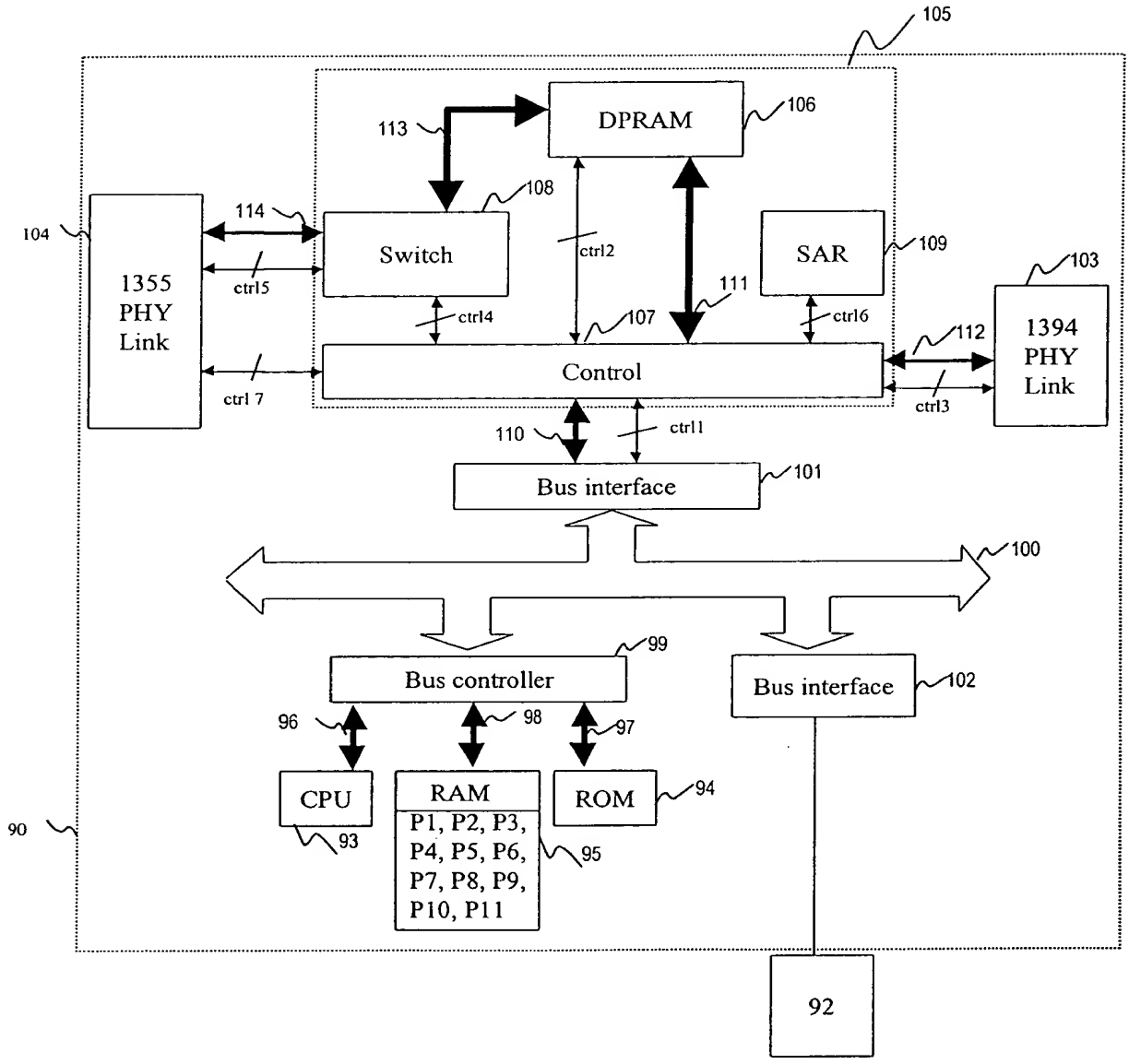
105
DPRAM
106
113
108
114
104
1355
PHY
Link
Switch
ctrl2
SAR
109
103
ctrl5
111
ctrl4
107
ctrl6
112
1394
PHY
Link
Control
ctrl 7
ctrl3
110
ctrl1
Bus interface
101
100
99
Bus controller
Bus interface
102
96
98
97
CPU
RAM
ROM
94
P1, P2, P3,
P4, P5, P6,
P7, P8, P9,
P10, P11
95
93
90
92

Figure 3a

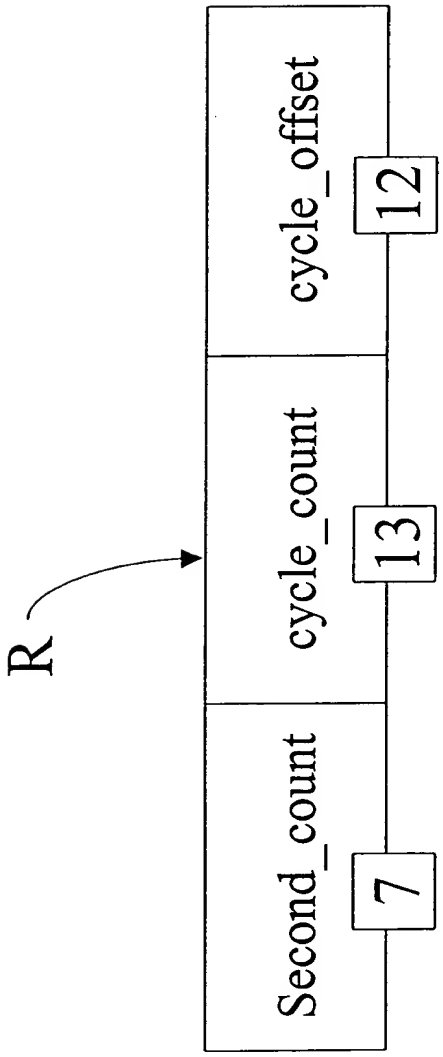

Figure 3b

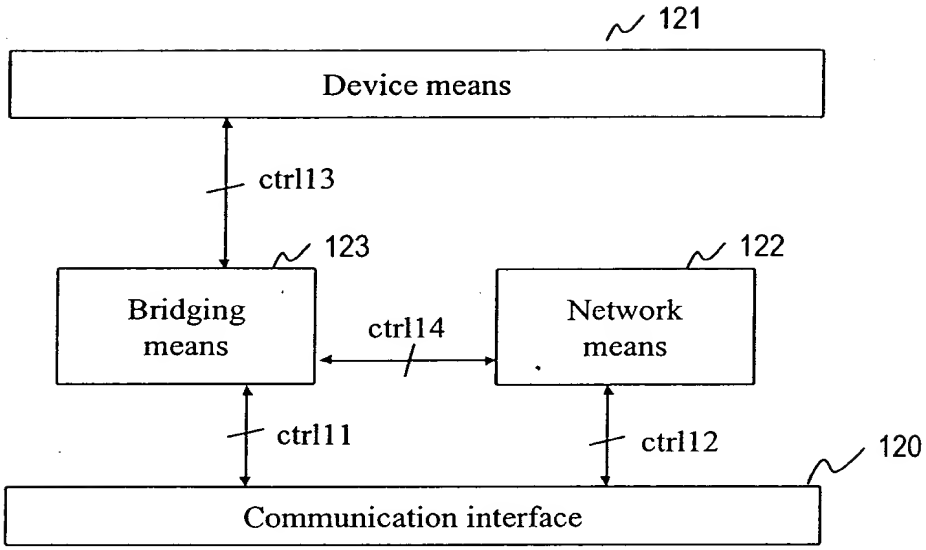
121
Device means
ctrl13
123
122
Bridging means
ctrl14
Network means
ctrl11
ctrl12
120
Communication interface

Figure 4

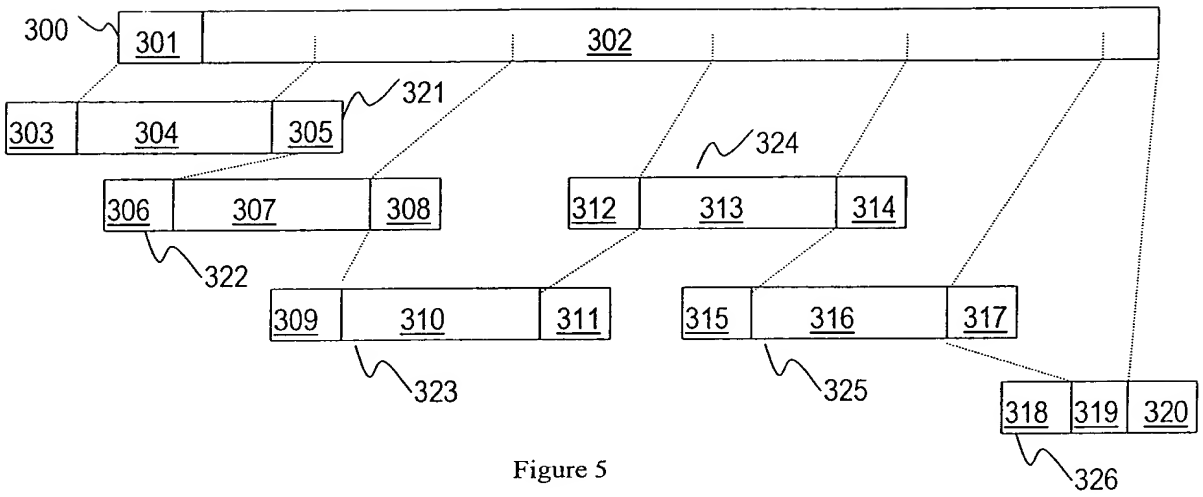

Figure 5

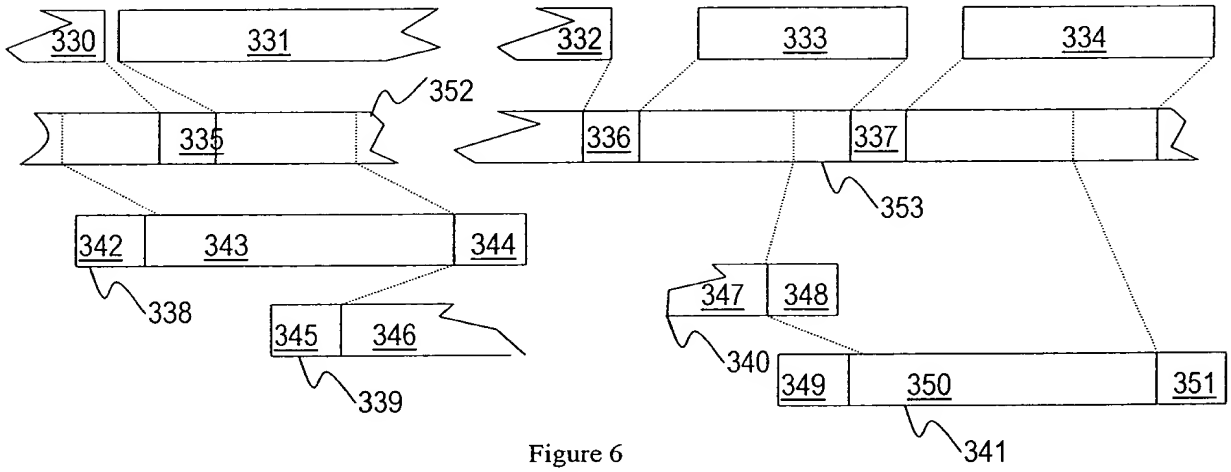

Figure 6

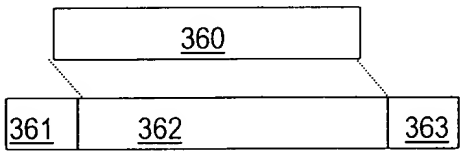

Figure 7

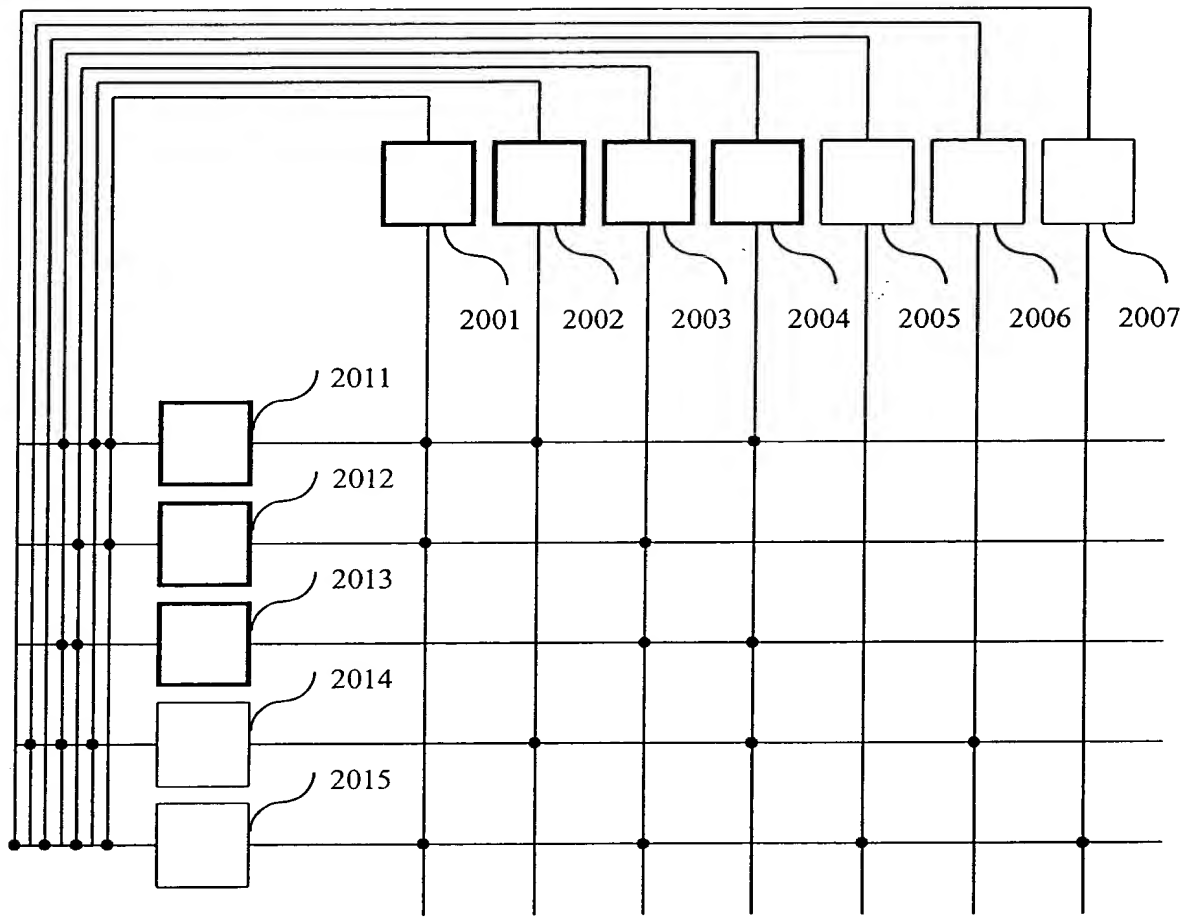

Figure 8a

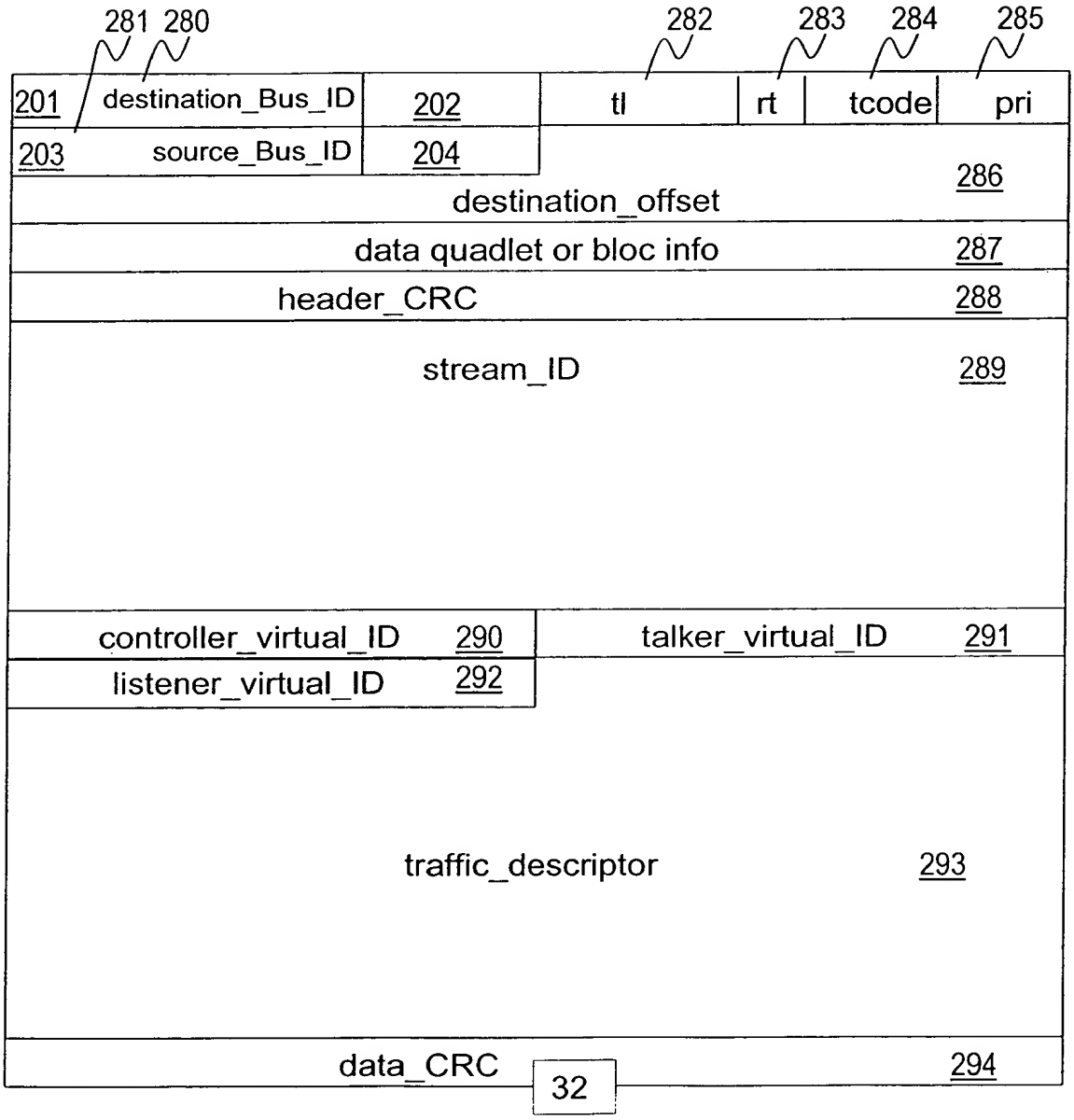
281
280
282
283
284
285
201
destination_Bus_ID
202
tl
rt
tcode
pri
203
source_Bus_ID
204
destination_offset
286
data quadlet or bloc info
287
header_CRC
288
stream_ID
289
controller_virtual_ID
290
talker_virtual_ID
291
listener_virtual_ID
292
traffic_descriptor
293
data_CRC
294
32

Figure 8b

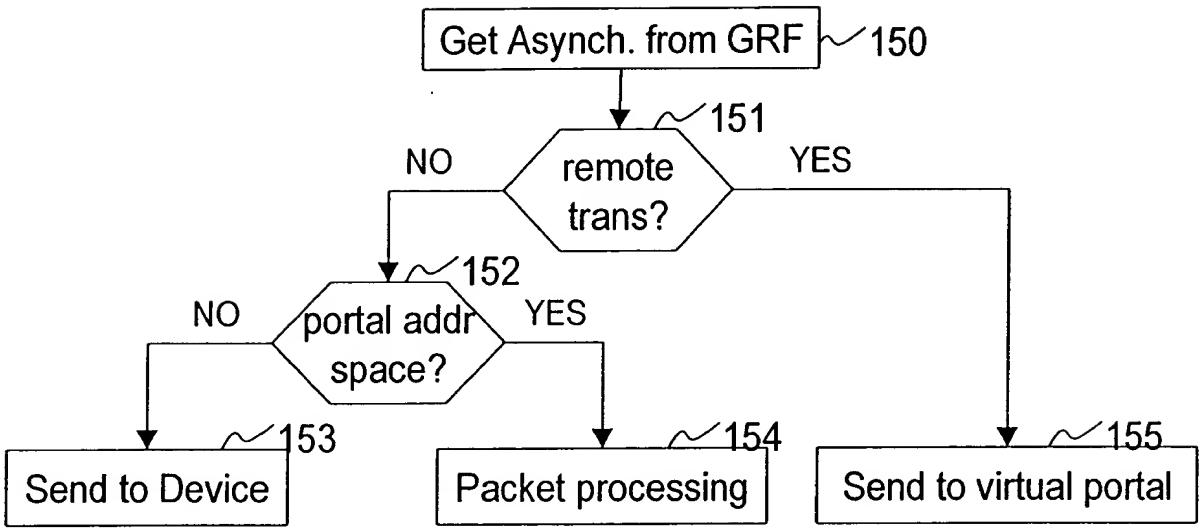

Figure 9a

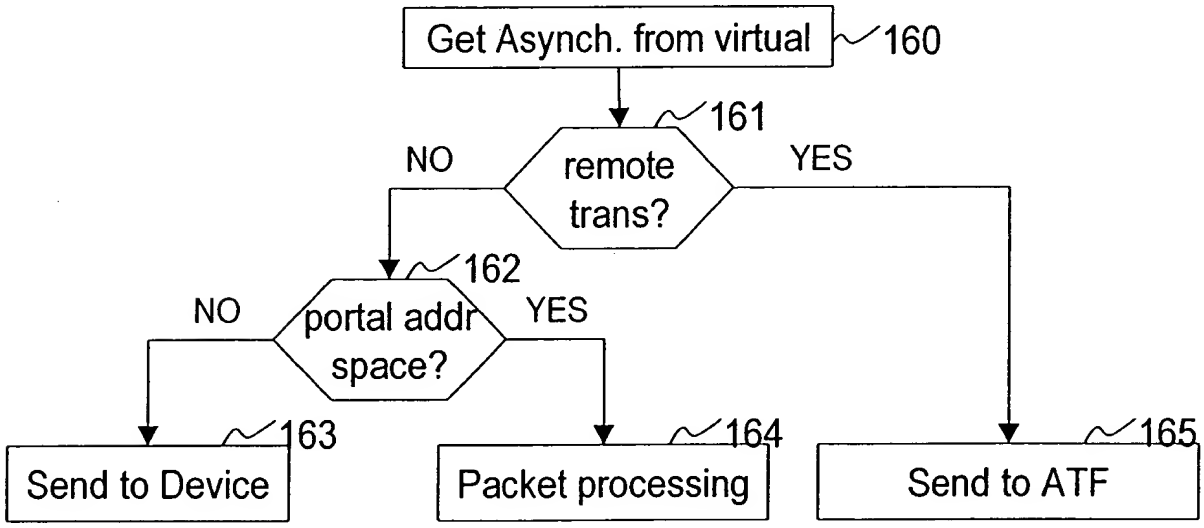

Figure 9b

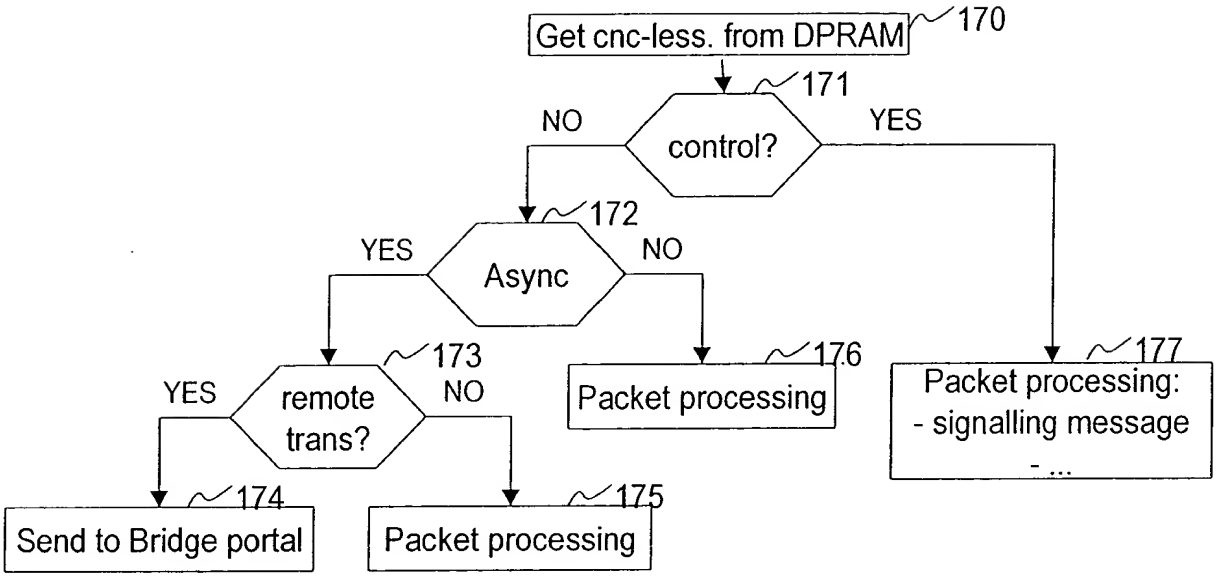

Figure 9c

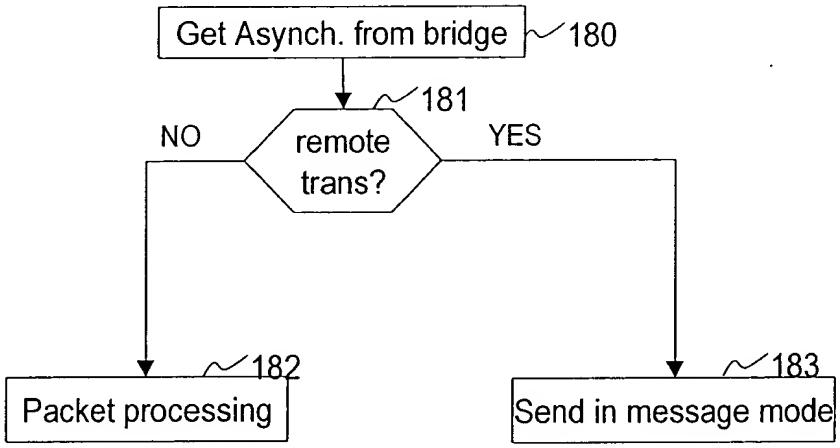

Figure 9d

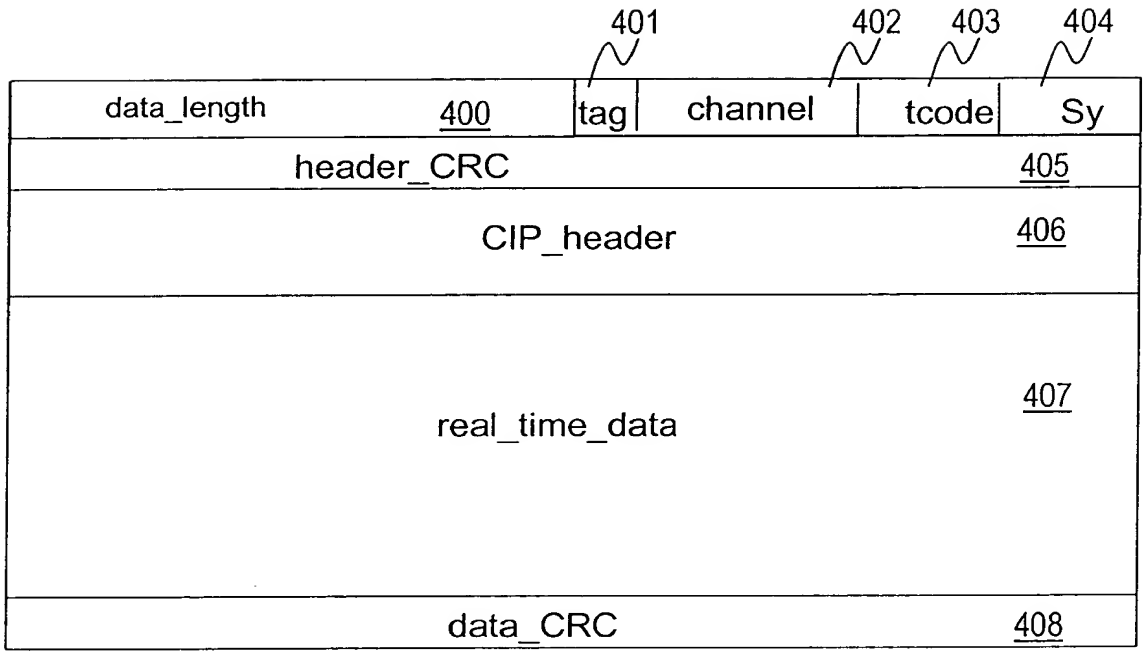
401
402
403
404
data_length
400
tag
channel
tcode
Sy
header_CRC
405
CIP_header
406
real_time_data
407
data_CRC
408

Figure 10

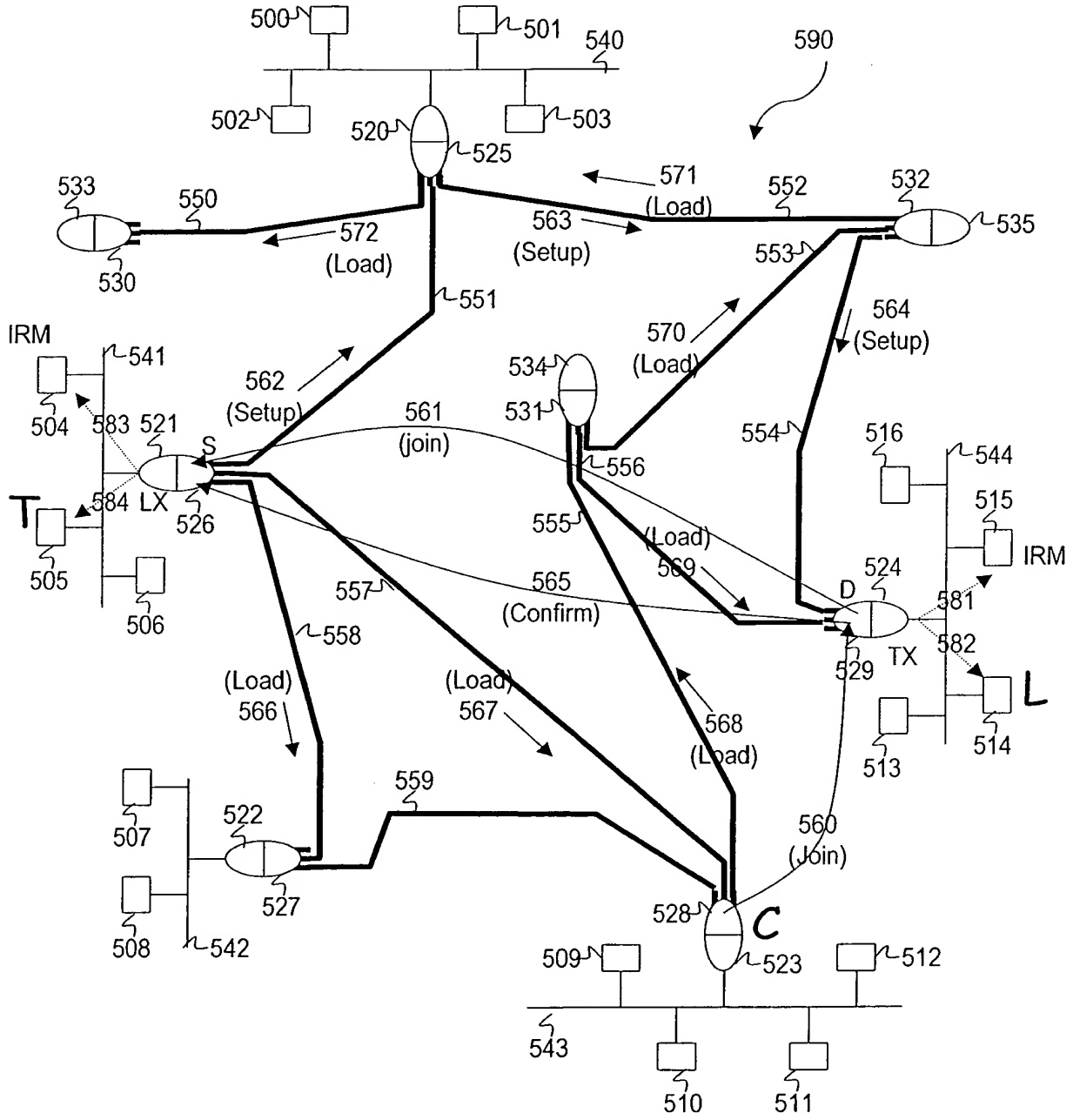
500
501
540
590
502
520
503
525
533
550
571
(Load)
552
532
572
(Load)
563
(Setup)
535
530
553
551
564
(Setup)
IRM
541
570
(Load)
534
562
(Setup)
561
(join)
531
554
516
504
583
521
S
556
544
584
LX
526
555
515
T
(Load)
569
IRM
524
505
557
565
(Confirm)
D
581
506
558
529
TX
582
L
(Load)
566
(Load)
567
568
(Load)
513
514
559
507
522
560
(Join)
527
528
C
508
542
509
523
512
543
510
511

Figure 11

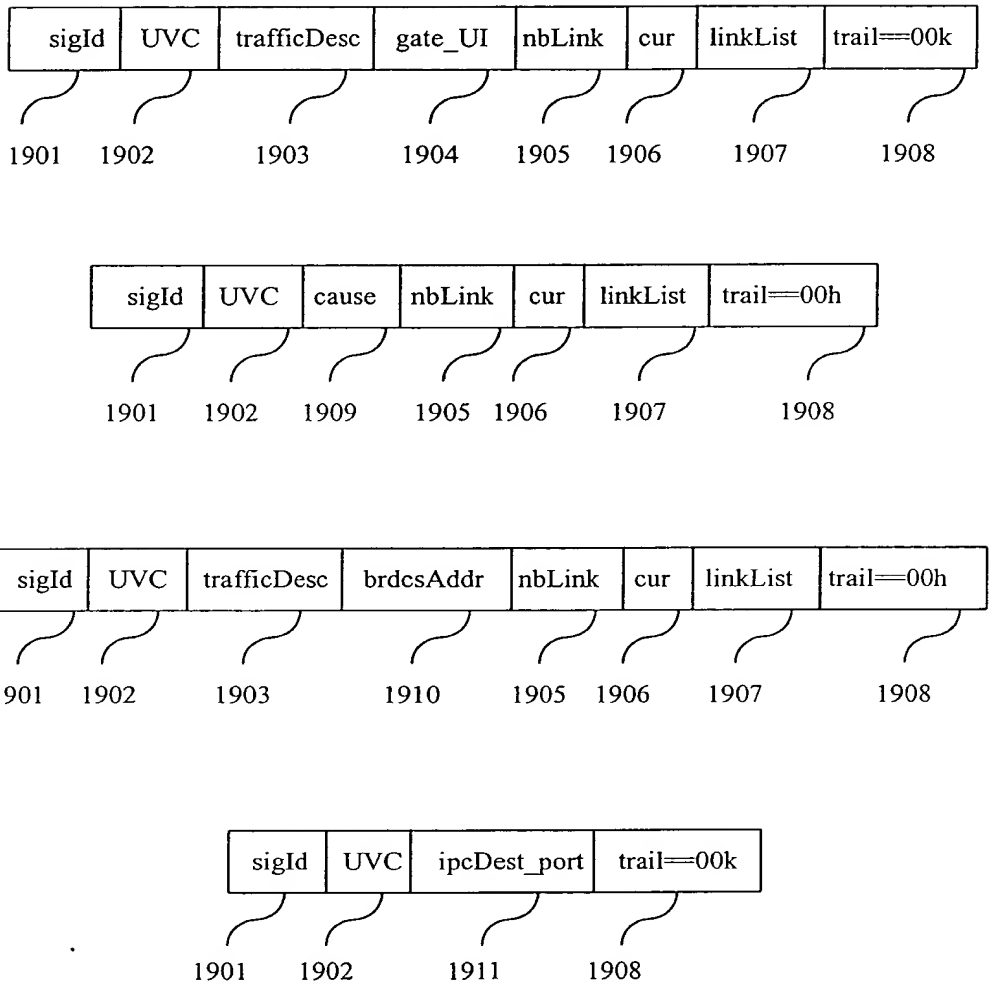
sigId
UVC
trafficDesc
gate_UI
nbLink
cur
linkList
trail==00k
1901
1902
1903
1904
1905
1906
1907
1908
sigId
UVC
cause
nbLink
cur
linkList
trail==00h
1901
1902
1909
1905
1906
1907
1908
sigId
UVC
trafficDesc
brdcsAddr
nbLink
cur
linkList
trail==00h
1901
1902
1903
1910
1905
1906
1907
1908
sigId
UVC
ipcDest_port
trail==00k
1901
1902
1911
1908

Figure 12

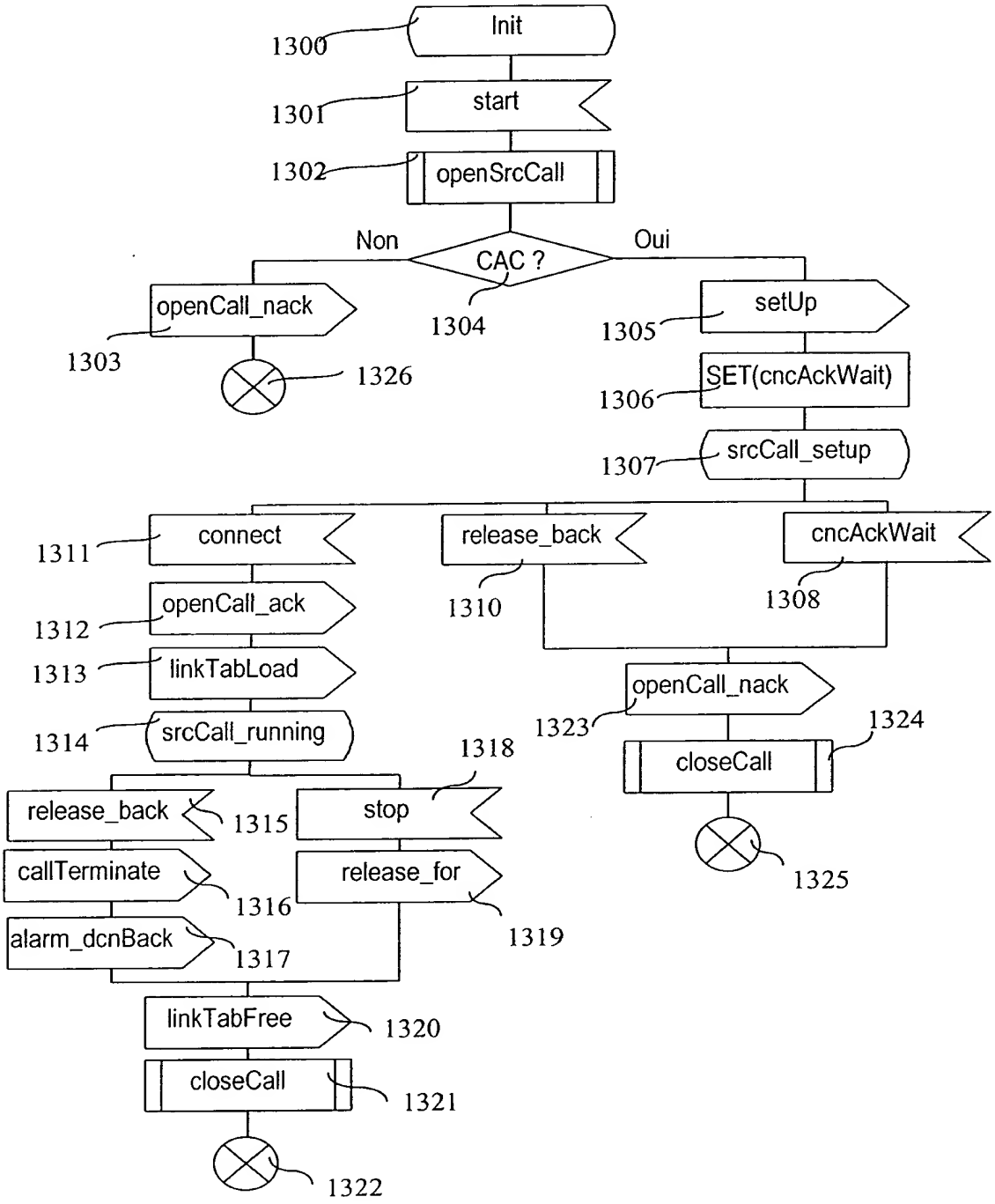
Init
1300
start
1301
openSrcCall
1302
Non
CAC ?
Oui
1304
openCall_nack
1303
1326
setUp
1305
SET(cncAckWait)
1306
srcCall_setup
1307
connect
1311
release_back
1310
cncAckWait
1308
openCall_ack
1312
linkTabLoad
1313
srcCall_running
1314
openCall_nack
1323
1324
closeCall
1325
1318
release_back
1315
stop
callTerminate
1316
release_for
1319
alarm_dcnBack
1317
linkTabFree
1320
closeCall
1321
1322

Figure 13

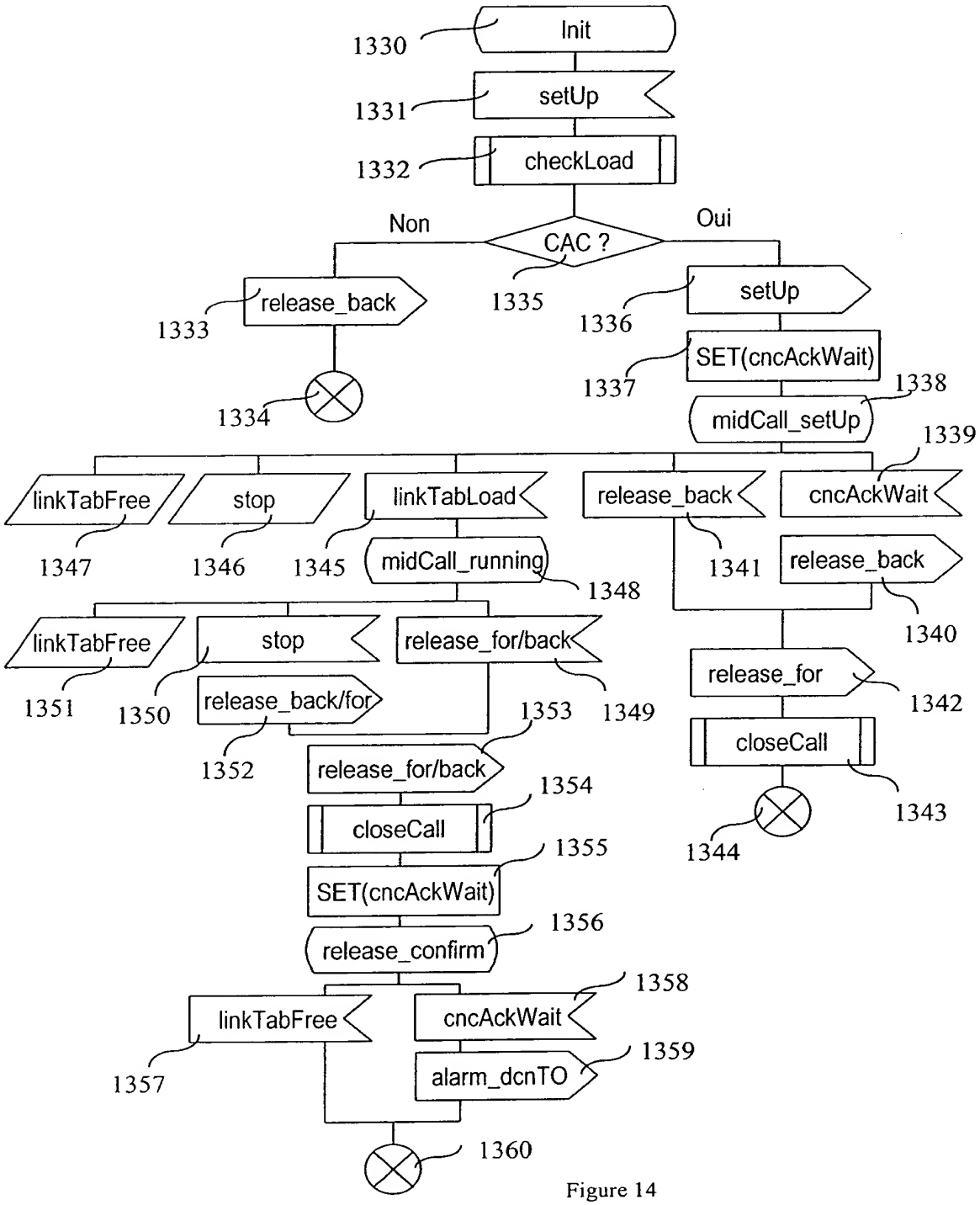
Init
setUp
checkLoad
CAC ?
Non
Oui
release_back
setUp
SET(cncAckWait)
midCall_setUp
linkTabFree
stop
linkTabLoad
release_back
cncAckWait
midCall_running
release_back
linkTabFree
stop
release_for/back
release_back/for
release_for
closeCall
release_for/back
closeCall
SET(cncAckWait)
release_confirm
linkTabFree
cncAckWait
alarm_dcnTO
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1340
1341
1342
1343
1344
1345
1346
1347
1348
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1360

Figure 14

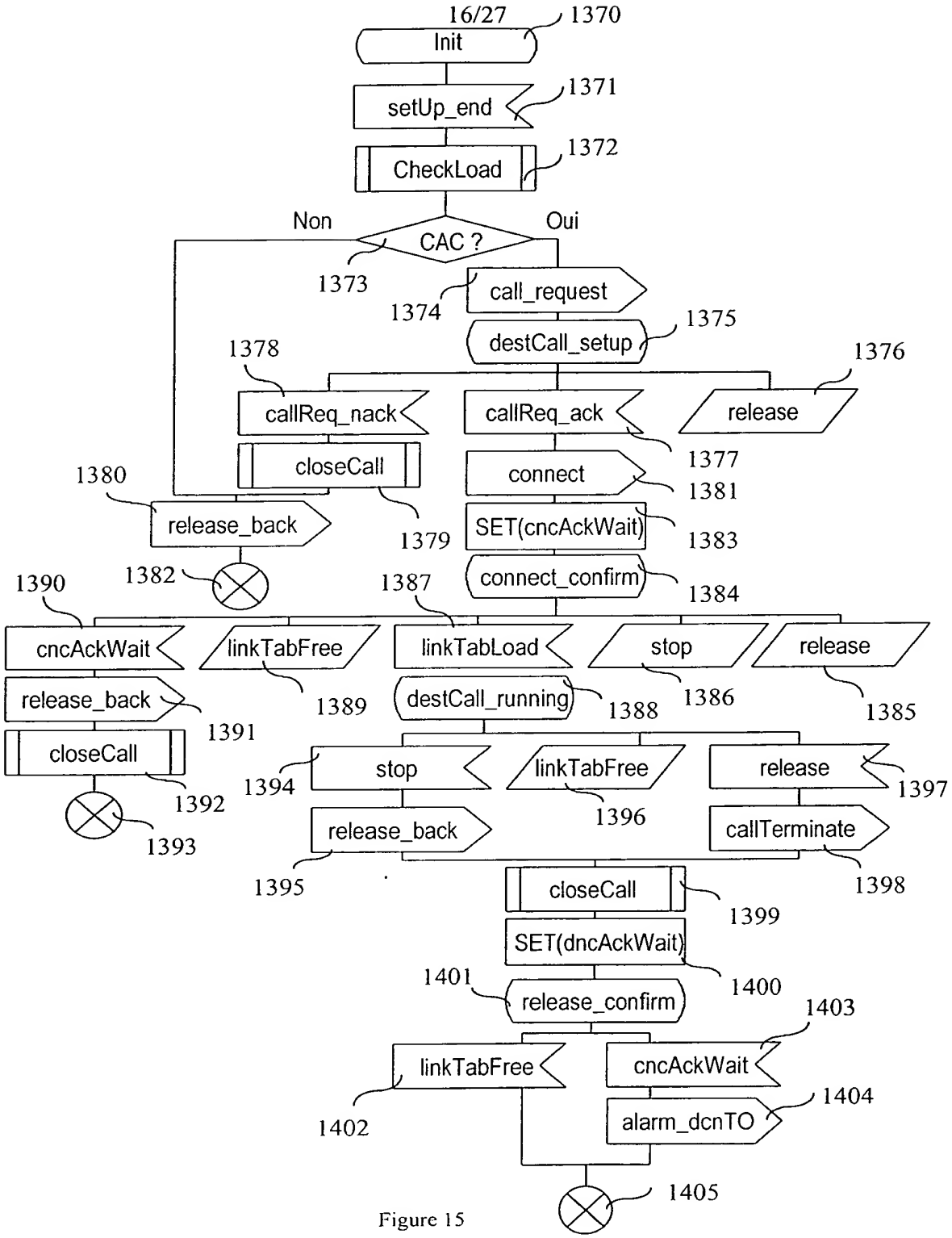
Init
1370
setUp_end
1371
CheckLoad
1372
Non
Oui
CAC ?
1373
call_request
1374
destCall_setup
1375
1378
1376
callReq_nack
callReq_ack
release
1377
closeCall
connect
1381
1380
release_back
1379
SET(cncAckWait)
1383
1382
connect_confirm
1384
1390
1387
cncAckWait
linkTabFree
linkTabLoad
stop
release
release_back
1389
destCall_running
1388
1386
1385
1391
closeCall
1394
stop
linkTabFree
release
1397
1392
1396
1393
release_back
callTerminate
1395
1398
closeCall
1399
SET(dncAckWait)
1400
1401
release_confirm
1403
linkTabFree
cncAckWait
1404
1402
alarm_dcnTO
1405

Figure 15

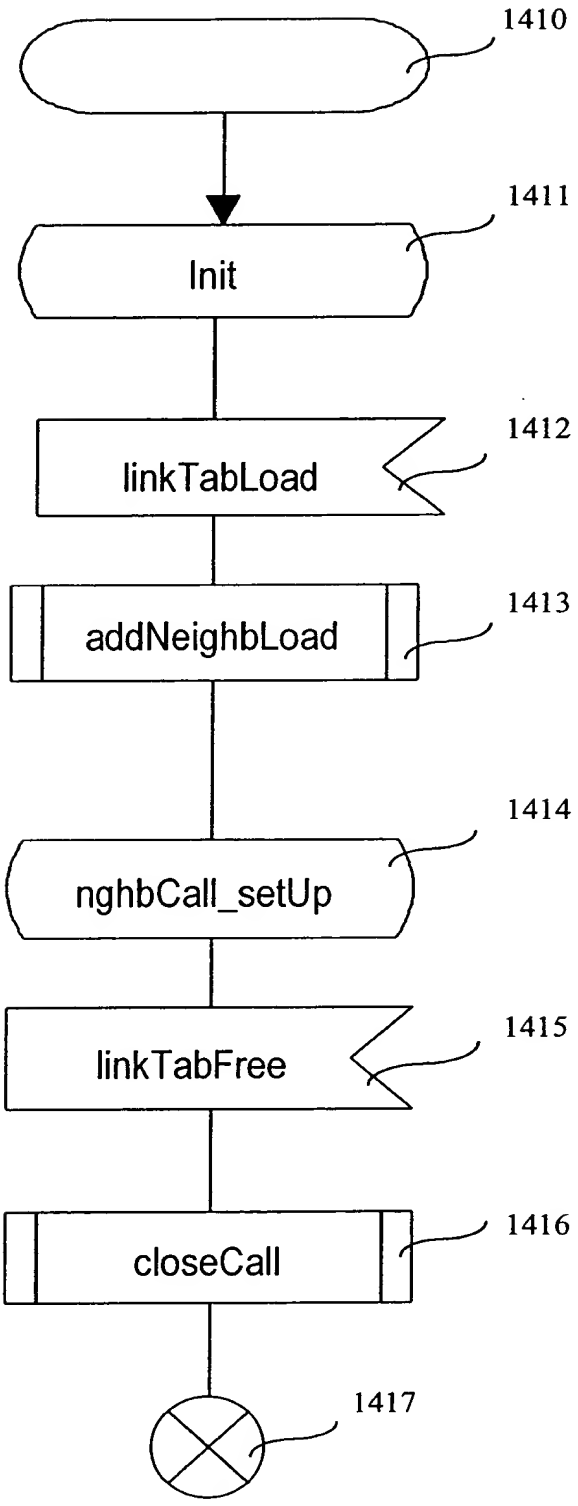
1410
1411
Init
1412
linkTabLoad
1413
addNeighbLoad
1414
nghbCall_setUp
1415
linkTabFree
1416
closeCall
1417

Figure 16

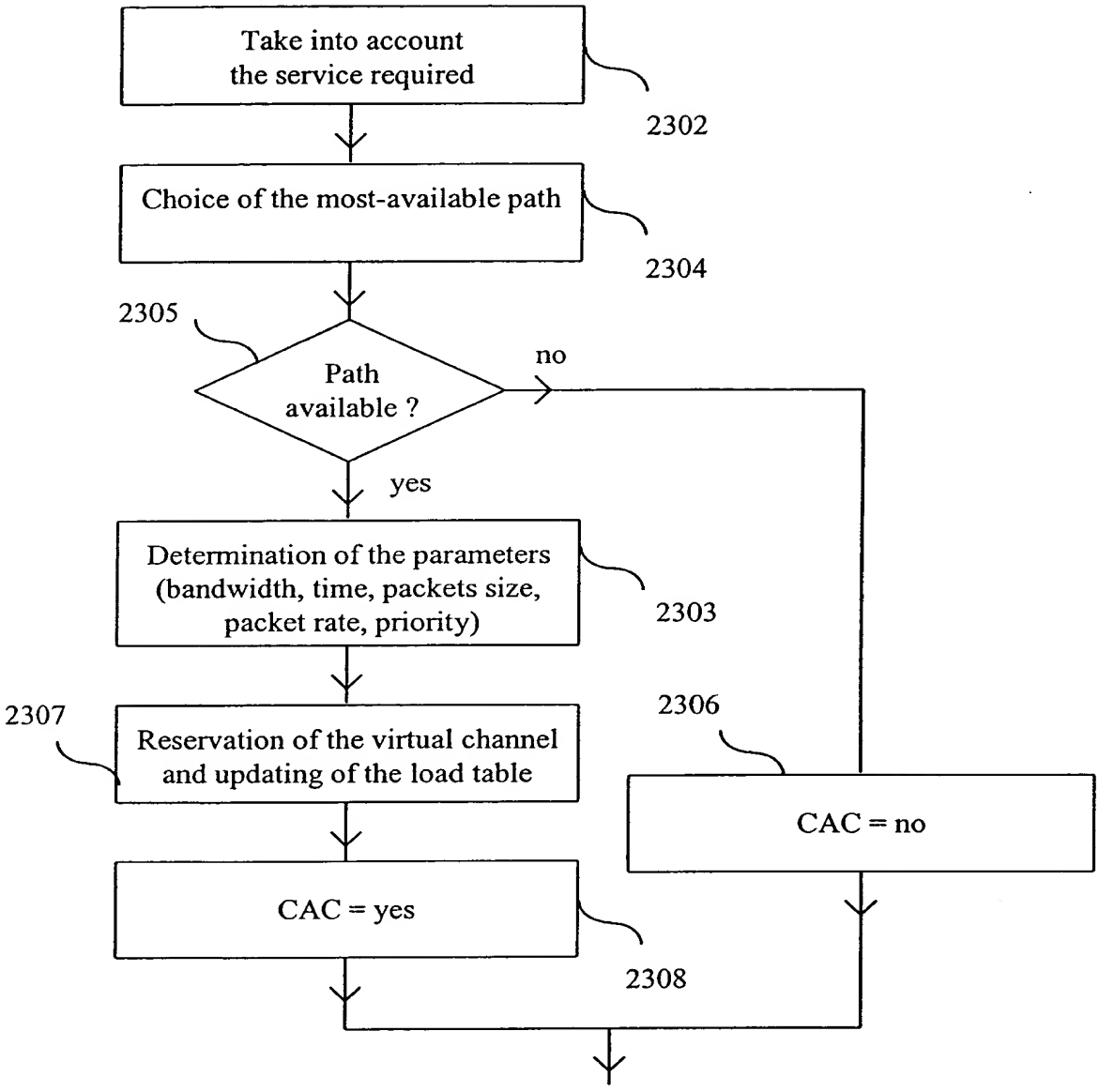
Take into account the service required
2302
Choice of the most-available path
2304
2305
Path available ?
no
yes
Determination of the parameters (bandwidth, time, packets size, packet rate, priority)
2303
2307
Reservation of the virtual channel and updating of the load table
2306
CAC = no
CAC = yes
2308

Figure 17

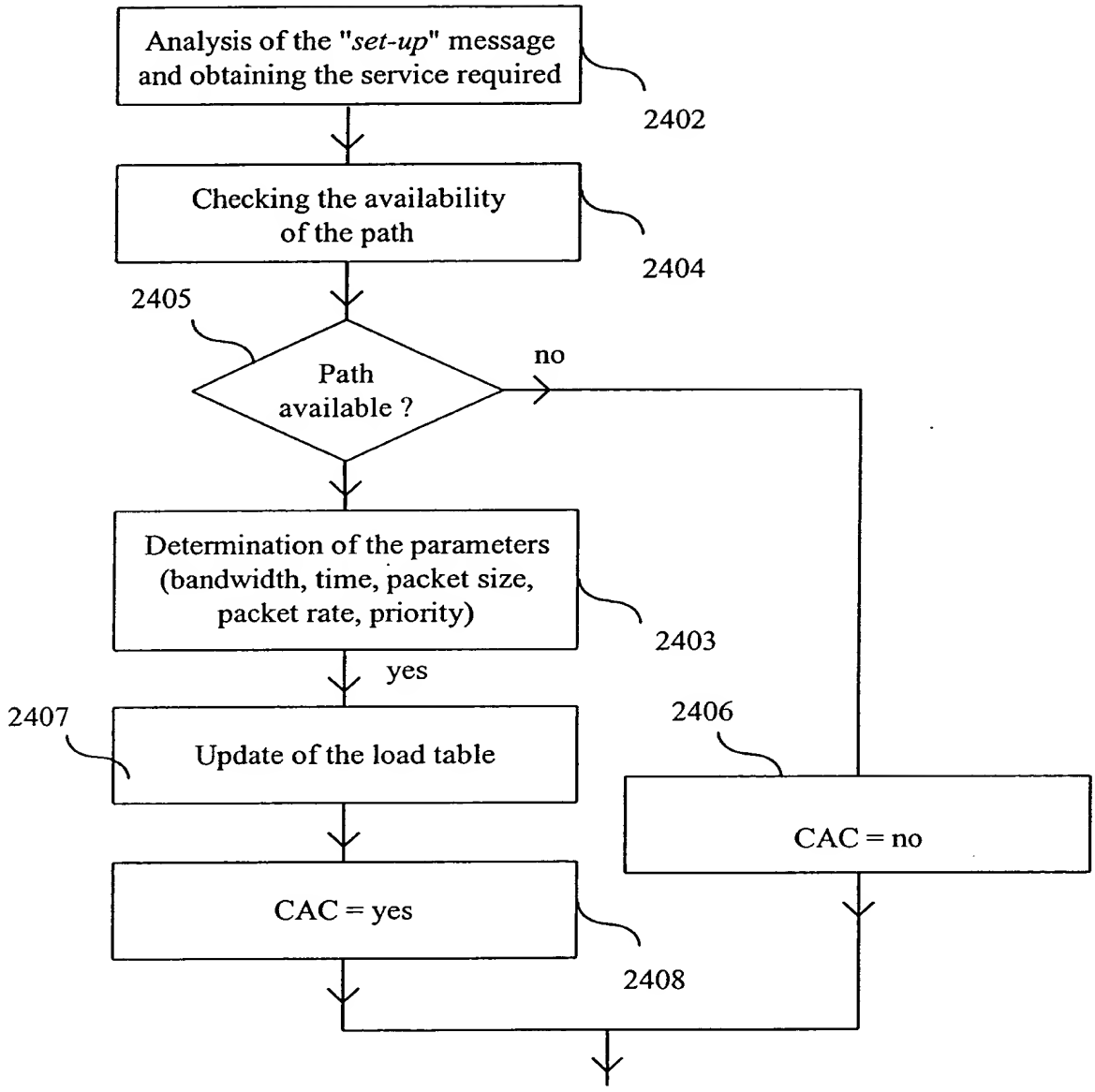
Analysis of the "set-up" message and obtaining the service required
2402
Checking the availability of the path
2404
2405
Path available ?
no
Determination of the parameters (bandwidth, time, packet size, packet rate, priority)
2403
yes
2407
Update of the load table
2406
CAC = no
CAC = yes
2408

Figure 18

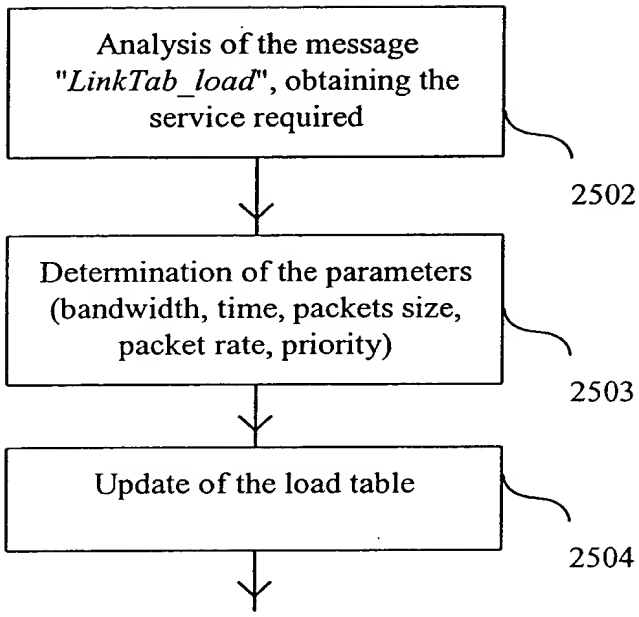
Analysis of the message "*LinkTab_load*", obtaining the service required
2502
Determination of the parameters (bandwidth, time, packets size, packet rate, priority)
2503
Update of the load table
2504

Figure 19

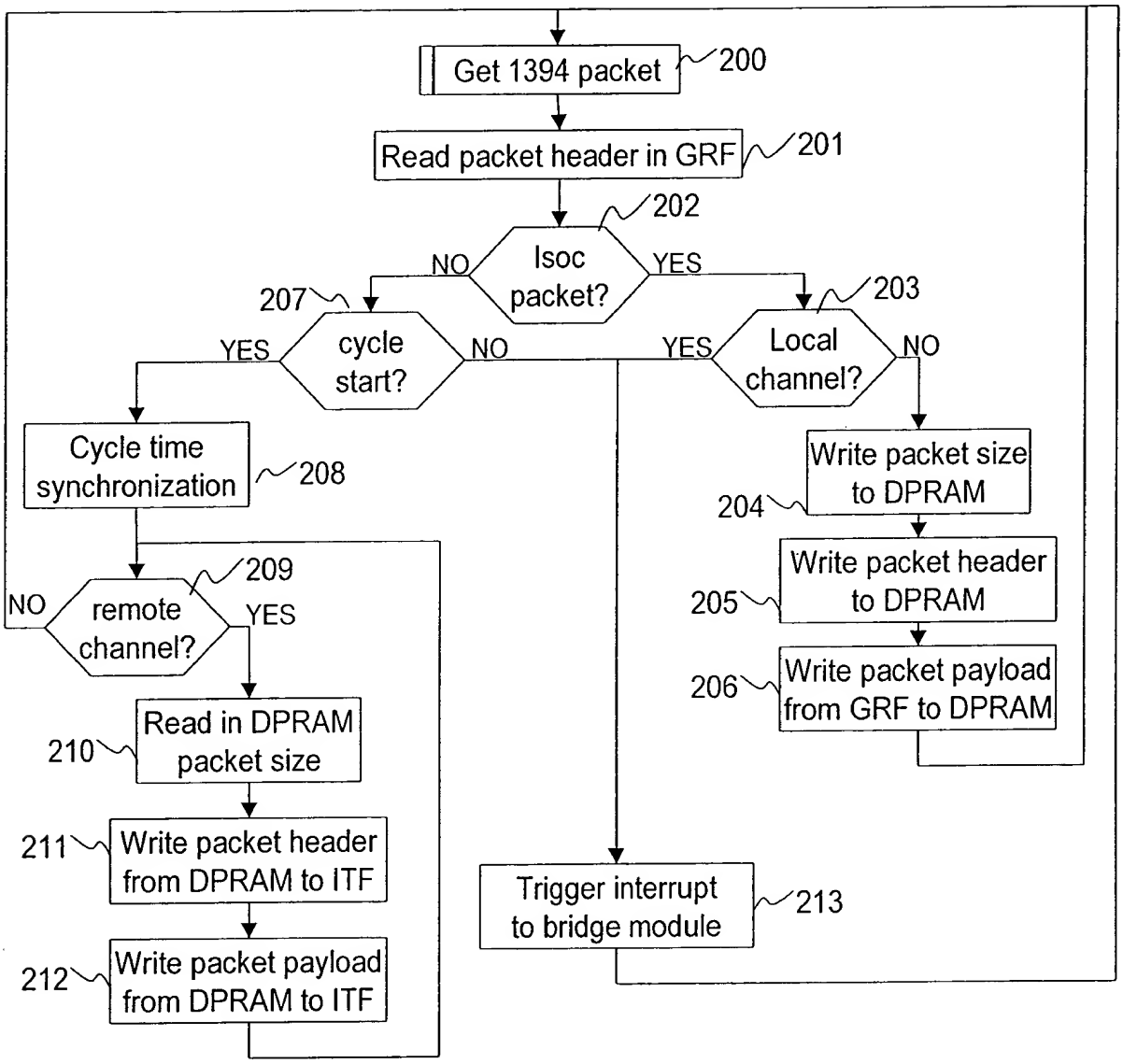
Get 1394 packet
200
Read packet header in GRF
201
202
Isoc packet?
NO
YES
207
cycle start?
YES
NO
203
Local channel?
YES
NO
Cycle time synchronization
208
Write packet size to DPRAM
204
Write packet header to DPRAM
205
Write packet payload from GRF to DPRAM
206
209
remote channel?
NO
YES
Read in DPRAM packet size
210
Write packet header from DPRAM to ITF
211
Write packet payload from DPRAM to ITF
212
Trigger interrupt to bridge module
213

Figure 20

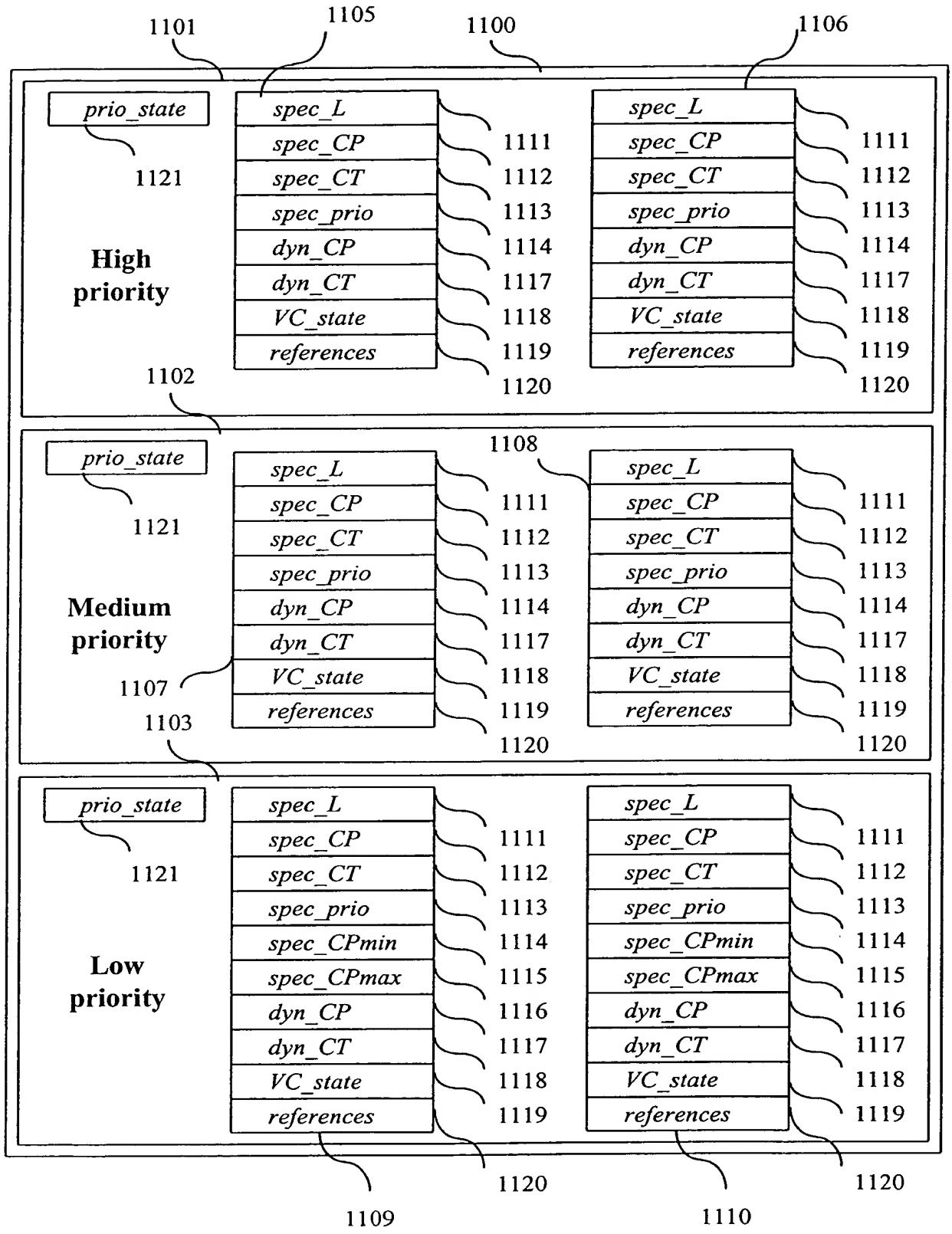
1101
1105
1100
1106
prio_state
1121
High priority
spec_L
spec_CP
spec_CT
spec_prio
dyn_CP
dyn_CT
VC_state
references
1111
1112
1113
1114
1117
1118
1119
1120
1102
1108
Medium priority
1107
1103
spec_CPmin
spec_CPmax
Low priority
1115
1116
1109
1110

Figure 21

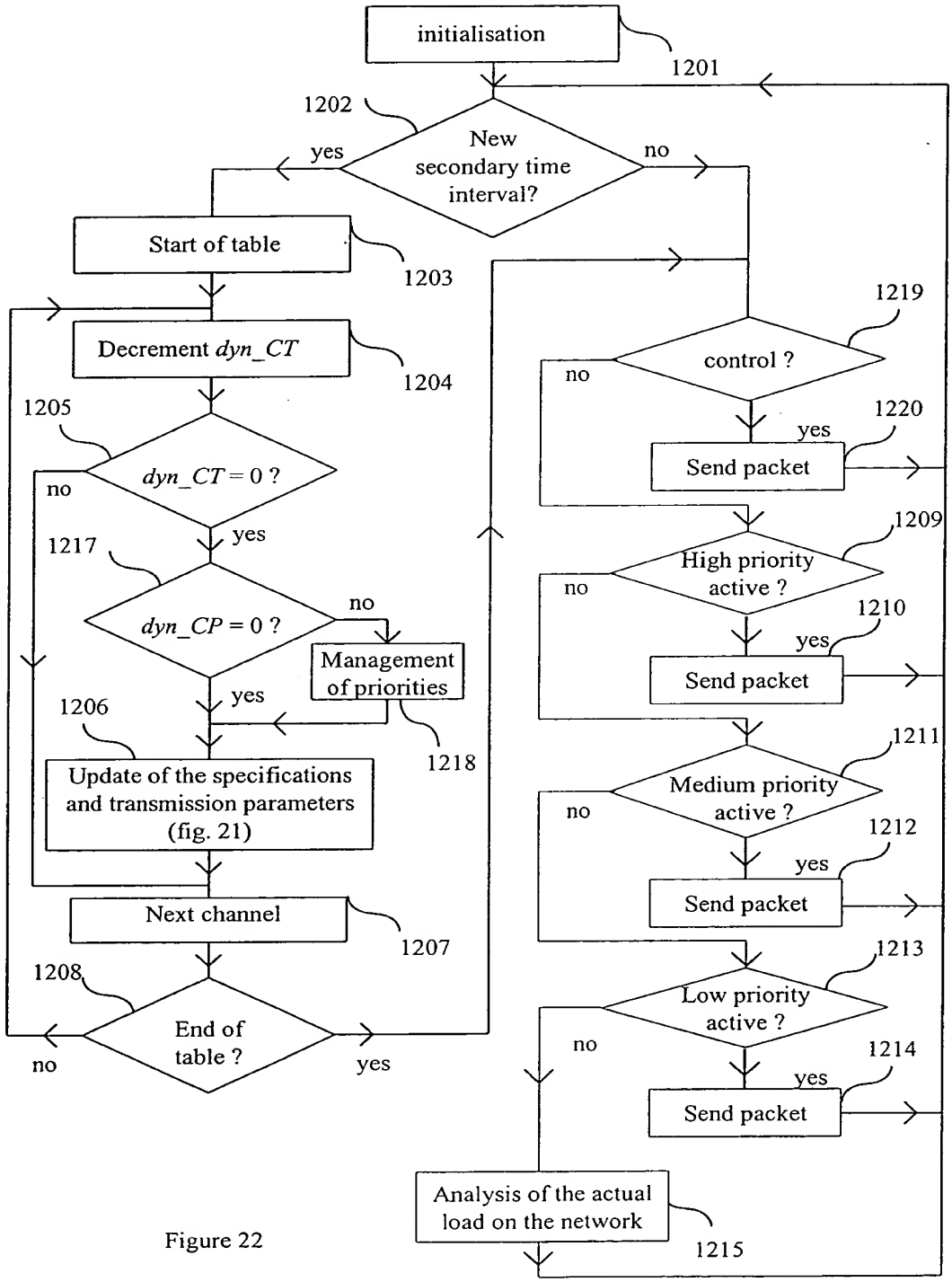
initialisation
1201
1202
New secondary time interval?
yes
no
Start of table
1203
Decrement dyn_CT
1204
1205
dyn_CT = 0 ?
no
yes
1217
dyn_CP = 0 ?
no
Management of priorities
1218
yes
1206
Update of the specifications and transmission parameters (fig. 21)
Next channel
1207
1208
End of table ?
no
yes
1219
control ?
no
yes
1220
Send packet
1209
High priority active ?
no
yes
1210
Send packet
1211
Medium priority active ?
no
yes
1212
Send packet
1213
Low priority active ?
no
yes
1214
Send packet
Analysis of the actual load on the network
1215

Figure 22

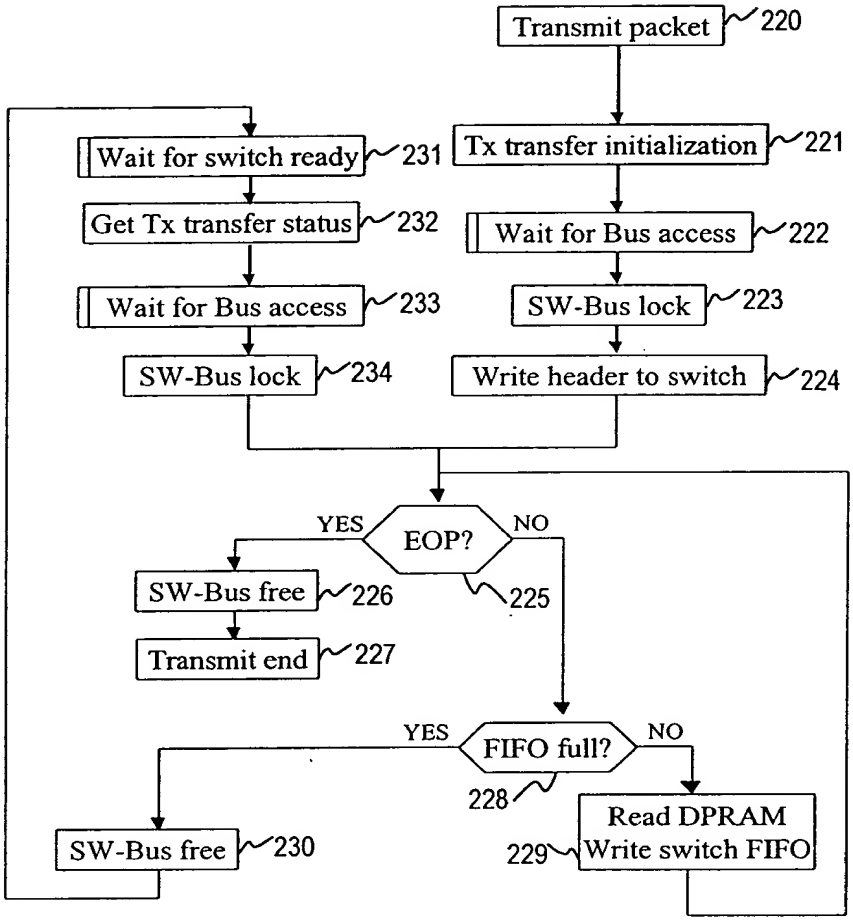
Transmit packet
220
Wait for switch ready
231
Tx transfer initialization
221
Get Tx transfer status
232
Wait for Bus access
222
Wait for Bus access
233
SW-Bus lock
223
SW-Bus lock
234
Write header to switch
224
YES
EOP?
NO
SW-Bus free
226
225
Transmit end
227
YES
FIFO full?
NO
228
Read DPRAM
Write switch FIFO
229
SW-Bus free
230

Figure 23

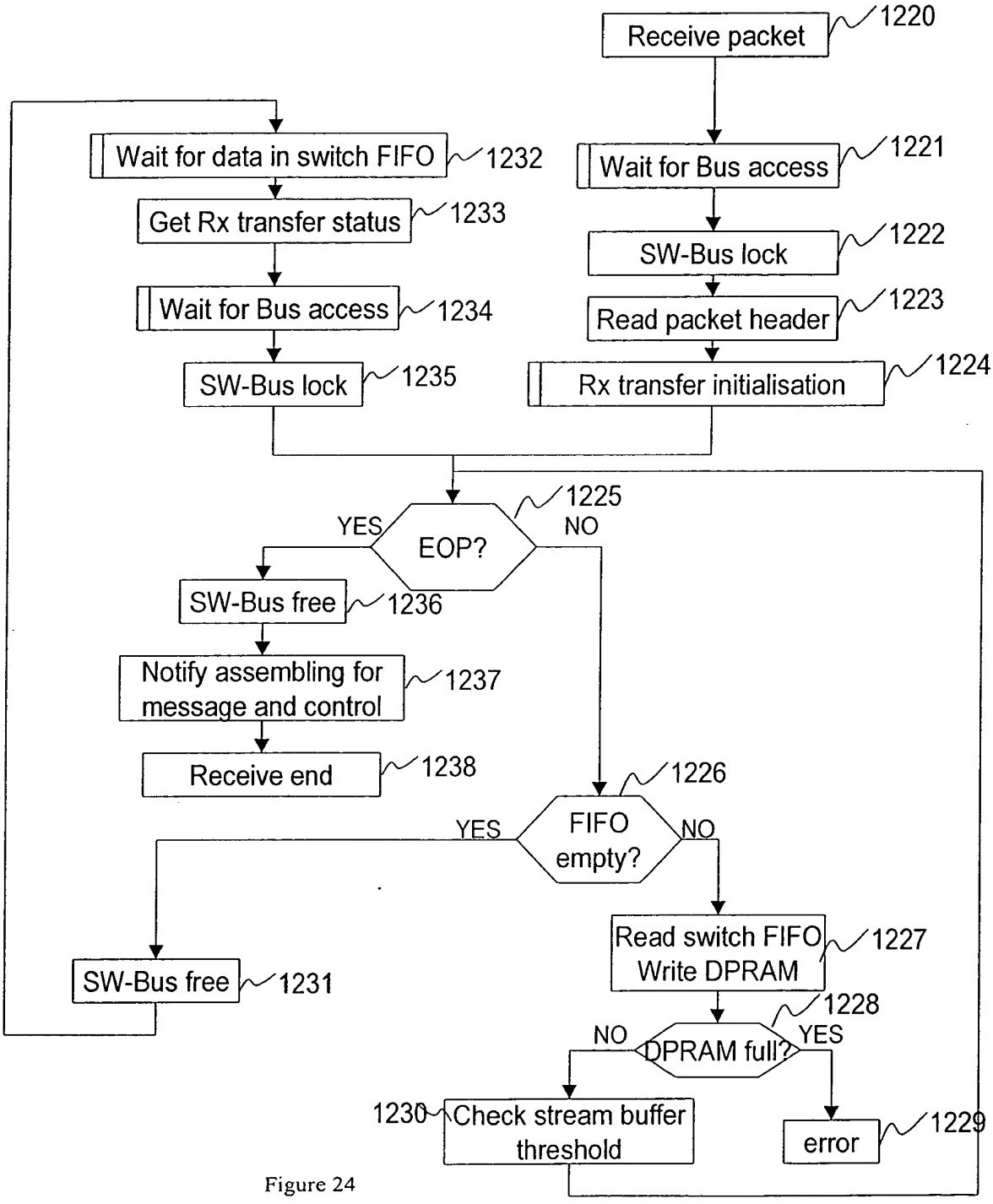
Receive packet
1220
Wait for data in switch FIFO
1232
Wait for Bus access
1221
Get Rx transfer status
1233
SW-Bus lock
1222
Wait for Bus access
1234
Read packet header
1223
SW-Bus lock
1235
Rx transfer initialisation
1224
1225
YES
EOP?
NO
SW-Bus free
1236
Notify assembling for message and control
1237
Receive end
1238
1226
YES
FIFO empty?
NO
Read switch FIFO Write DPRAM
1227
SW-Bus free
1231
1228
NO
DPRAM full?
YES
1230
Check stream buffer threshold
error
1229

Figure 24

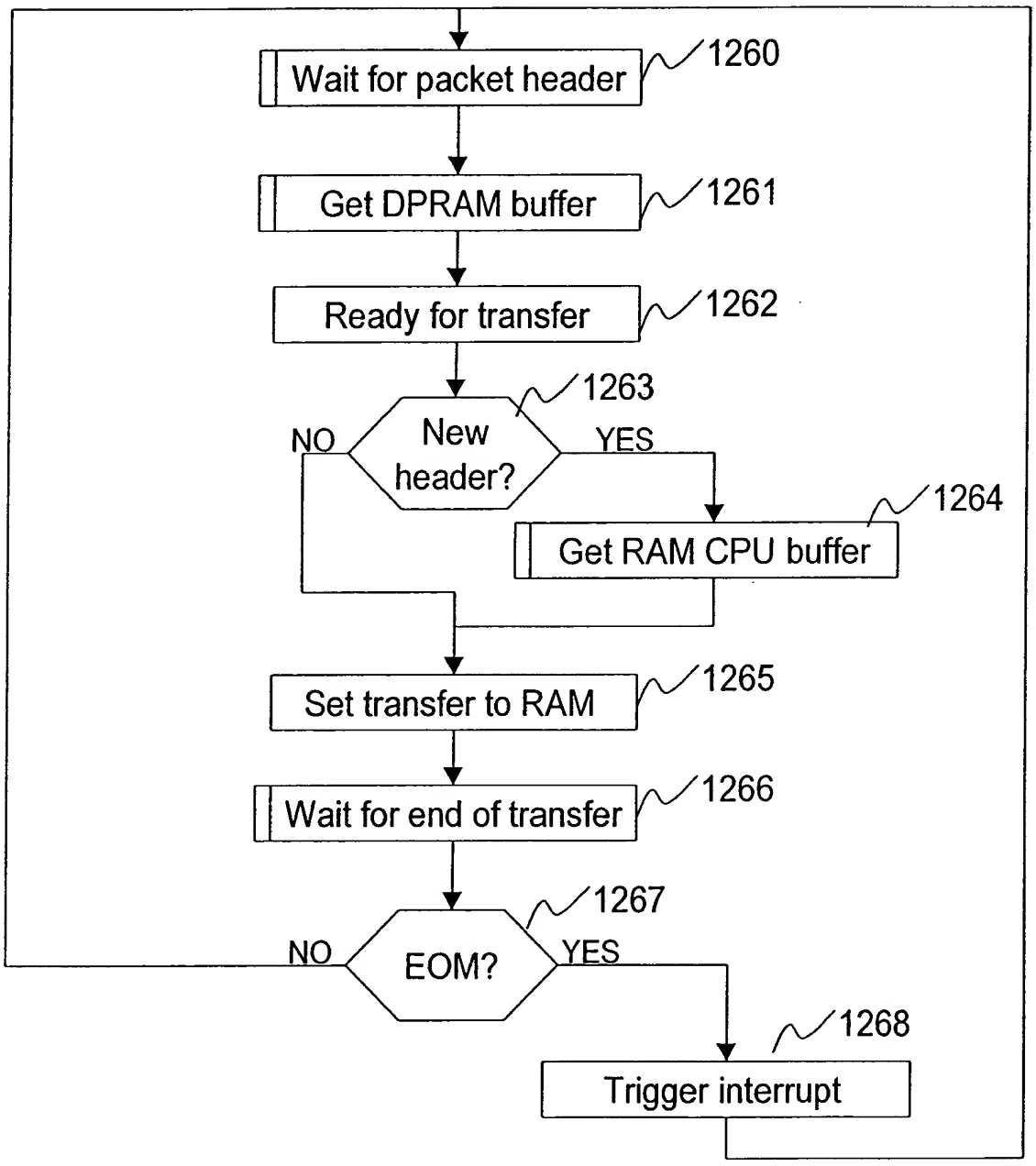
Wait for packet header
1260
Get DPRAM buffer
1261
Ready for transfer
1262
1263
NO
New header?
YES
1264
Get RAM CPU buffer
Set transfer to RAM
1265
Wait for end of transfer
1266
1267
NO
EOM?
YES
1268
Trigger interrupt

Figure 25

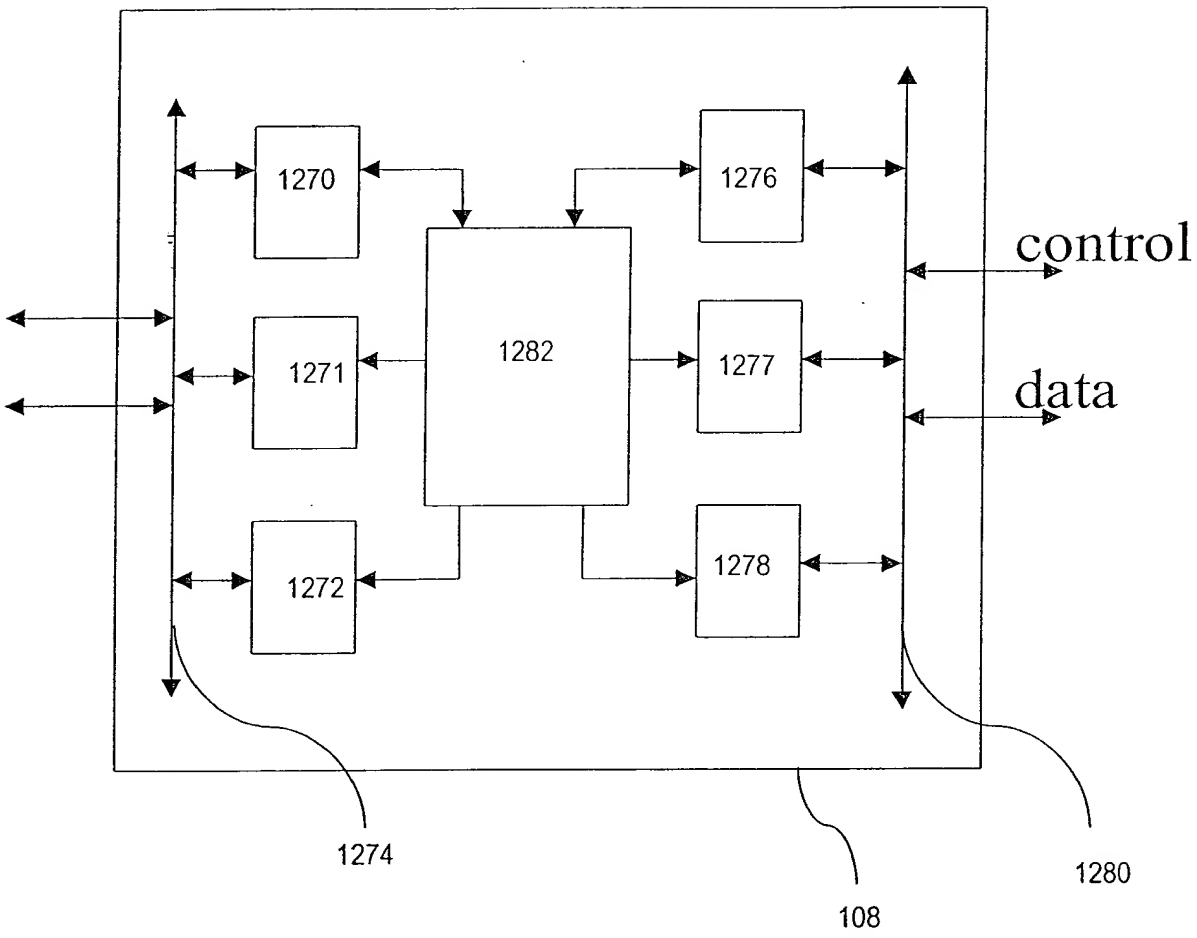
1270
1276
control
1271
1282
1277
data
1272
1278
1274
108
1280

Figure 26